

THIS MATERIAL INCLUDES FORWARD-LOOKING STATEMENTS BASED ON MANAGEMENT’S CURRENT REASONABLE BUSINESS EXPECTATIONS. IN THIS DOCUMENT, THE WORDS ‘BELIEVE(S)’, ‘CAN’, ‘WILL’, ‘AIMS’, AND SIMILAR EXPRESSIONS IDENTIFY CERTAIN FORWARD-LOOKING STATEMENTS. THESE STATEMENTS ARE MADE IN RELIANCE ON THE PRIVATE SECURITIES LITIGATION REFORM ACT, SECTION 27A OF THE SECURITIES ACT OF 1933, AS AMENDED. THERE ARE NUMEROUS RISKS AND UNCERTAINTIES THAT COULD RESULT IN ACTUAL RESULTS DIFFERING MATERIALLY FROM EXPECTED OUTCOMES. ALL DOCUMENTS ON THIS WEBSITE SPEAK AS OF THEIR DATE AND THE COMPANY UNDERTAKES NO OBLIGATION TO PUBLICLY UPDATE OR REVISE ANY FORWARD-LOOKING STATEMENTS THEY MAY CONTAIN.

Bion’s Beef Opportunity

In 1935 inflation-adjusted terms, beef is 63% more expensive today, while pork and chicken, primarily raised in indoor factory farms with highly integrated supply chains, are 12% and 62% cheaper, respectively. At \$66 billion/year (retail value), the beef industry has been a target of consumer groups whose concerns include air and water pollution, food safety, and the treatment of animals and workers. Furthermore, the beef industry has also been an economic target for a number of plant-based beef alternative products, such as Beyond Meat, that have gained significant market traction.

The US beef industry is at the doorstep of a transformative opportunity to address the growing demand for a sustainable product offering. Bion believes this can be achieved at scale for a premium segment of the market, with minimal disruption to the large, existing commodity beef market, both domestic and export.

“Sustainability” goes well beyond “organic”, a concept that primarily addresses product inputs and is, in fact, LESS sustainable than traditional production, due to lower yields. Sustainability is a more important and relevant concept to the consumer and the beef industry because it also captures outputs, specifically, the environmental impacts of production. To the industry’s detriment, the cost to implement comprehensive waste treatment at the feedlot, where most of the environmental impacts occur, is simply not supported by this low-margin commodity business, absent increased prices, subsidies, or new revenues. Until the advent of renewable energy credits, the cost of technology such as anaerobic digestion was far greater than offsetting tax incentives and revenue from the sale of renewable natural gas.

So how can a premium segment be carved out to meet the demand for sustainability, both in its product offerings and its livestock operations?

Figure 1. The Beef Industry Conundrum – How to Get from “A” to “B”?



Bion has developed and tested its patented technology and proprietary technology platform, which will enable generation of significantly greater revenue associated with comprehensive onsite waste management than has been previously possible. Bion’s business model is focused on managing costs over the entire supply chain, from feed crop production to insemination to final processing, while capturing multiple revenue streams, some that are available today, some that are evolving. The “Future State” represented in [Figure 1](#) will be financed by monetizing the value of a premium USDA-certified sustainable and/or organic brand, selling high-value organic fertilizer products, and selling air and water quality trading credits related to carbon and nutrients.

Financial Analysis		<i>All figures in '000s</i>		
Beef Comparison - Snapshot		Single 15,000 head module		
	Traditional Feedlot	Bion Sustainable	Bion Organic	
Facility CAPEX	\$ 8,000	\$ 31,000	\$ 31,000	
Revenue				
Base Beef Revenues	\$ 56,779	\$ 62,430	\$ 62,430	
Sustainable Brand Premium		\$ 6,243	\$ 6,243	
Organic Brand Premium			\$ 31,215	
Biogas & RFS/LCFS Credits		\$ 4,553	\$ 4,553	
Coproducts		\$ 10,300	\$ 7,758	
Income Adjustment ¹	\$ 3,603	\$ 3,603	\$ 3,603	
Nutrient Credits		???	???	
Total Revenues	\$ 60,381	\$ 87,129	\$ 115,802	
Expenses				
Cattle Acquisition	\$ 46,453	\$ 50,821	\$ 63,705	
Operations	\$ 13,428	\$ 20,269	\$ 30,040	
Total Expenses	\$ 59,881	\$ 71,090	\$ 93,746	
Delta Δ				
EBITDA	\$ 500	\$ 16,039	\$ 22,056	
Earnings	\$ (202)	\$ 11,832	\$ 19,860	

¹Income Adjustment to normalize Traditional Feedlot revenue baseline

The Financial Analysis-Beef Comparison is based on numerous assumptions (see forward looking statements at the beginning and end of this document). It represents a comparison of traditional beef production to Bion’s advanced sustainable and sustainable+organic model. It is a snapshot in time (beef markets are cyclical) that is meant only to illustrate the increase (DELTA) in revenues and earnings attributable to Bion’s 3G Tech platform and business model. In any given year, traditional beef production will be more or less profitable than depicted; however, the DELTA, which results mostly from new revenue sources, would be expected to remain approximately the same. Note Cattle Acquisition costs represent three ‘turns’ of the feedlot’s capacity over a one-year period. This model assumes approximately four months on feed per cow, a number that will vary.

In today’s environment, Bion’s projected revenues from currently available sources can amortize the cost of technology adoption and related infrastructure in under three years. This amortization period can be shortened as evolving revenues, including environmental credit markets, fully mature.

Specifically, Bion’s technology converts animal manure to high-value organic fertilizer products onsite, including ammonium bicarbonate crystals, a ‘pure’ readily available nitrogen source that can be used to grow lower-cost organic corn (animal feed) at large scale. Such a nitrogen source, previously unaffordable, will significantly increase yield per acre, improving both the economic and environmental sustainability of ‘organic’. The scale at which ammonium bicarbonate is manufactured from the livestock waste stream is sufficient to support a new organic segment of corn-fed beef and, eventually, pork products. The combination of “sustainable” and “sustainable+organic” reinforces the opportunity for premium branding with improved revenues and margins.

Beyond ammonium bicarbonate, Bion’s platform produces renewable natural gas and the associated D3 RINS (and/or Low Carbon Fuel Standard credits in California), organic dry solids (soil supplement) and,

eventually, verified nutrient credits. In Pennsylvania, Bion has been leading a stakeholder group to enact legislation that would allow the State, or its municipalities, to purchase verified nutrient reductions, such as those generated by the Bion platform, in lieu of more expensive traditional options for meeting their Chesapeake Bay nutrient mandates under the Clean Water Act.

Figure 2. Bion’s Technology Enables the Revenue to Fund the Transition



Bion’s intellectual property, consisting of both patents and trade secrets, takes advantage of the arbitrage opportunity between the finite supply of organic fertilizer/feed and the essentially limitless supply of livestock waste at CAFOs. This symbiotic relationship is mutually reinforcing – increasing consumer demand for organic meat generates more organic corn demand which increases the demand for organic fertilizer to support that demand.

Bion and its partners have the means to open and expand a new market segment of premium-priced meat products by “harvesting” its waste. As a capstone benefit, Bion’s onsite treatment can transform a CAFO from a “brownfield” non-point source permitted facility to a point source permitted facility. This will allow the operation to be valued by the market as any other industrial operation, based on a multiple of earnings, not the liquidation value of the plant, equipment, and animal inventory, as these facilities are valued today.

By expanding into premium branded products and realizing more effective supply chain integration, valuations related to livestock production can be further propelled by higher gross margins, reduced unit costs and reduced environmental impact. The end result is the opportunity for extraordinary wealth creation.

The Financial Impact – Potential Valuation

The financial impact of Bion’s technology platform includes premium pricing for two specific 15,000 head feedlot scenarios:

- “Environmentally Sustainable” branding where the livestock is confined and fed a diet of conventional grains and distillers’ grains.
- “Environmentally Sustainable+Organic” branding for organic feeder cattle where the livestock are confined for up to 120 days and fed a ration of organic grains.

In both scenarios, the cattle will be housed in a covered barn feedlot with daily/continuous manure collection feeding Bion’s onsite waste treatment platform, resulting in the cattle being marketed with a USDA Processed Verified Program (PVP) certification of an environmentally sustainable brand.

For the sake of simplicity from a financial modeling standpoint, a single purpose vehicle (SPV) is assumed to be established to finance and own the cattle and the Bion technology platform, including the barns at

the feeding operation. All incremental revenues and expenses are assumed to flow to the SPV so that the economics of the SPV can be isolated from that of the host feeding operation.

The capital requirements for the Bion technology platform are the same in both scenarios and is estimated at \$31 million. In both scenarios, we assume the CAPEX is financed 70% with 10-year term debt at 8% p.a. Cattle acquisition costs are assumed to be \$17.4 million and \$21.4 million for the sustainable (non-organic) and organic scenarios, respectively; these costs are assumed to be 100% financed on a revolving line at 8%. For purposes of the IRR calculations, capital is assumed to be invested one year in advance of operations.

In both scenarios, revenue would be generated from the sale of organic ammonium bicarbonate fertilizer and carbon credits under California’ Low Carbon Fuel Standard (LCFS). The assumed price of the ammonium bicarbonate is based on an actual agreement to supply *liquid* ammonia that was recently made between a large dairy producer and a major national fertilizer producer. The value of LCFS credits is based on current market value using a low-end carbon intensity score (CI).

A branding premium will be available as a result of Bion’s sustainable branding capability, and we have assumed, as described above, that 100% of this premium flows to the SPV. We have estimated this premium at 10% of the carcass value. We have chosen a conservative figure to account for the fact that there is presently no national at-scale sustainable branding in the livestock industry.

The organic scenario takes credit for the increased revenue for having animals that have been fed and raised according to strict organic guidelines. We have estimated this premium at 50% for purposes of the proforma, and we have again assumed 100% of this premium flows to the SPV. As a point of reference, we note that grass fed organic beef commands at least a 40% to 50% premium over conventional grain-fed beef.

No credit is taken in either scenario for the sale of nutrient credits, a market which is still evolving, or for the value of residual processed manure solids containing irons, minerals, nutrients and salts, because the market value of this material can vary widely by region. Further, no credit is taken with respect to the impact of probable Investment Tax Credits (related to biogas production) on CAPEX.

Utilizing the above assumptions, we estimate the leveraged IRR for a single 15,000 head module to be 123% and 185% for the conventional and organic scenarios, respectively, assuming no escalation of any unit prices associated with revenue or expense. Capital is fully returned within three years in the conventional scenario and in less than two years in the organic scenario.

A further analysis was prepared to examine the financial performance of staging 15,000 head modules, both conventional and organic, over time as follows:

Year	0	1	2	3	4	5	6
COMBINED SCENARIO (10 x 15,000-hd modules)							
Sustainable (15K-hd modules)		1	3	5	7	7	7
Organic (15K-hd modules)		0	1	2	3	3	3

In this scenario, a total of \$310 million invested over 5 years (starting in Year 0) would generate annual revenues of approximately \$178 million, at full run-rate, beginning in year 4. Project value, based on 15x EBITDA would exceed \$2.5 billion by Year 4, with a total of ten operational modules that would represent penetration in the overall beef market of approximately one percent.

